CCT 0 4 1999 6

SEQUENCE LISTING

(1) GENERAL \INFORMATION

(i) APPLICANT: Wubc, Ralph T.
Grey, Howard M.
Sette, Alessandro
Cells, Esteban
Southwood, Scott

- (ii) TITLE OF THE INVENTION: HLA Binding Peptides and Their Uses
- (iii) NUMBER OF SEQUENCES: 103
- (iv) CORRESPONDENCE ADDRESS:
 - (A) ADDRESSEE: Townsend and Townsend and Crew LLP
 - (B) STREET: Two Embarcadero Center, Eighth Floor
 - (C) CITY: San Francisco
 - (D) STATE: CA
 - (E) COUNTRY: USA
 - (F) DIF: 94111-3834
- (v) COMPUTER READABLE FORM:
 - (A) MEDIUM TYPE: Diskette
 - (B) COMPUTER: IBM Compatible
 - (C) OPERATING SYSTEM: DOS
 - (D) SOFTWARE: FastSEQ for Windows Version 2.0

(vi) CURRENT APPLICATION DATA:

- (A) APPLICATION NUMBER: 09/017,524
- (B) FILING DATE: 03-FEB-1998
- (C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
 - (A) APPLICATION NUMBER: US 08/589,107
 - (B) FILING DATF: 03-CAN-1996
- (viii) ATTOFHEY/AGENT INFORMATION:
 - (A) MAME: Weber, Ellen Lauver
 - (B) REGISTRATION NUMBER: 32,762
 - (C) REFERENCE/DOCKET NUMBER: 018623-005091US
- (ix) TELECOMMUNICATION INFORMATION:
 - (A) TELEPHONE: 415-576-0200
 - (P) TELEFAR: 415-576-0300
 - (€) TELEM:

(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amuno acid
 - (€) STFANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Phe Leu Trp Thr Sln Ser Leu Arg Arg 1

- (2) INFORMATION FOR SEQ ID NO:2:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOWOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Gly Ile Pro Tyr Cys Asn Tyr Ser Lys

- (2) INFORMATION FOR SEQ ID NO:3:
- (i) SEQUEDUE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDMESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Gly Val Val Arg Val Trp Asp Val Lys

- (I) INFORMATION FOR SEQ ID NO:4:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (E) TOPOLOGY: linear
- (ii) MOLFOULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Met Leu Arg Leu Fhe Asp Phe Asn Lys 1

- (2) INFORMATION FOR SEQ ID NO:5:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amine acids
 - (B) TYFE: arcine acid
 - (C) STFANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYFE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Arg Thr Arg Asp ile Tyr Ile Ser Arg

- (2) INFORMATION FOR SEQ ID NO:6:
- (i) SEQUENCE CHARACTERISTICS:
 - (A LENGTH: 9 amine acids
 - (P) TYPE: amino acid
 - (C) STFANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE, TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Ser Ala Val Ile Asp Ala Leu Pro Arg

- (2) INFORMATION FOR SEQ ID NO:7:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amine acids
 - (B) TYPE: amin∳ acid
 - (C) STRAMBERMES: single
 - (D TOPOLOGY: lknear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Ser Val Leu Ard Ala Val Ieu Pro Arg

- (d) INFORMATION POR SEQ ID NO:8:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amind acids
 - (P) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (11) MOLFOYLE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Val Thr Phe Leu Esu Leu Cys Gl∜ Arg 1 5

- (2) INFORMATION FOR SEQ ID NO:9:
- (i) SEQUEDITE CHAFACTERISTIAS:
 - (A) LENGTH: 10 amino acid
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Ala Met Ser Cys Asp\Phe Asn Gly Gly Lys
1 5

- (2) INFORMATION FOR SEQ ID NO:10:
- (i) SEQUENCE CHAPACTERISTICS:
 - (A) LENGTH: $1\dot{q}$ amino acids
 - (B) TYPE: amin't acid
 - (C) STRANDEDNE\$S: single
 - (D) TOPOLOGY: Linear
- (ii) MOLECULE TYFE: peptide
- (mi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Gly Ser Tyr Ile Ala Leu Asp Ser Gly Arg

- (A) INFORMATION FOR SEQ ID NO:11:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amine acids
 - (B) TYPE: amino acto
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (Mi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Lys Ser Phe Leu Trp Thr Gln Ser Leu Arg

- (2) INFORMATION FOR SEQ ID NO:12:
- (a) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOMOGY: linear
- (ii) MOLECULE TYPE: peptide
- (mi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Leu Thr Tyr Ser Gln Leu Met Thr Leu Lys

- (2) INFORMATION FOR SEQ ID NO:13:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STRAMDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

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Arg Thr Arg Asp Ile Tyr Ile Ser Arg Arg 5 1

- (2) INFORMATION FOR SEQ ID NO:14:
- (1) SEQUENCE CHARACTERISTICS:
 - (A' LENGTH: 3 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Tyr Arg His Leu Leu Cys Leu Glu Arg

- (2) INFORMATION FOR SEQ ID NO:15:
- (m) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) ToPoLOGY: linear
- (ii) MODECTIE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Gly Thr Tyr Glu Gly Leu Leu Arg Arg Arg

- (A) INFORMATION FOR SEQ ID NO:16:
- (%) SEQUENCE CHAFACTERISTICS:
 - (A: LENGTH: 9 amino acids
 - (B: TTPE: amino acid
 - (C) STRANDEDNESS: \$ingle
 - (D) TOPOLOGY: linear
- (%i) MOLECULE TYPE: paptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Leu Leu Arg Arg Ash Gir Met Gly Arg

- (2) INFORMATION FOR SEQ ID NO:17:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C: STEANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptid\$

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Phe Gln Asn Ser Thr Phe Ser Phe Arg 1

- (2) INFOFMATION FOR SEQ ID NO:18:
- (i) segrende characteristics:
 - (A) LENGTH: 9 amine acids
 - (B) TYPE: amino acid
 - (C) STRAMPEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Leu Leu Ala Phe Leu Gln Tyr Arg Arg

- (2) INFORMATION FOR SEQ ID NO:19:
- (i) sequence tharacteristics:
 - (A) LENGTH: 10 amine acids
 - (P) TYPE: amino acid
 - (C: STRANDEDNESS: single
 - (D: ToPOLOGY: limear
- (ii) MOLECULE TYPE: pepulde
- (ix) FEATURE:
 - (A) MAME/REY: Modified-site
 - (B) LOCATION:\2...2
 - (D) OTHER INFORMATION: Haa = Val, Leu or Met
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: $3 \setminus ... 3$
 - (D) OTHER INFORMATION: Haa = Tyr or Asp
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 8... 8
 - (D) OTHER INFORMATION: Kaa = Gln or Asn
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Xaa Xaa Xaa Kaa Kaa Kaa Ile **x**aa Lys Lys -1 - 3 - 10

- (2) INFOFMATION FOR \$EQ ID NO:20:
- (i) SEQUENCE CHAFACTERISTICS:
 - (A) DENGTH: 11 amino adids
 - (B Tirt: amin: abid
 - (C) SIFANDEDNESS: singl♠
 - (D) ToPOLOGY: linear
- (ii) MOLECULE TYPE: peptidd

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20:

His Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys 1 10

- (2) INFORMATION FOR SEQ ID NO:21:
- (1) SEQUENCE CHAPACTERISTICS:
 - (A: LENGTH: 9 amine acids
 - (B) TYPE: amono acid
 - (C) STRAMDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLFCULE TYFE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:

Ser Val Val Arg Arg Ala Phe Pro His

- (2) INFORMATION FOR SEQ ID NO:22:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDMESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (mi) SEQUENCE DESCRIPTION: SEQ ID NO: 22:

Ala Phe Thr Phe Ser Pro Thr Tyr Lys ϵ

- (3) INFORMATION FOR SEQ ID NO:23:
- (a) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B' TYFE: amin: acid
 - (C) STFANDEDNESS: single
 - (D) TOFOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Ser Ser Ala Gly Pro Cys Ala Leu Arg 1 5 \

- (2) INFORMATION FOR SEQ ID NO:24:
- (i) SEQUENCE CHAPACTERISTICS:
 - (A) LENGTH: 9 amino acits
 - (B) TYFE: amino acid
 - (C) STRANCEDNESS: single
 - (5) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24: Cys Ala Leu Arg Phe Thr Ser Ala Arg

- (2) INFORMATION FOR SEQ ID NO:25:
- (1) SEQUENCE CHARACTERISTICS:
 - (A, LENGTH: 19 amino acids

 - (B, TYPE: amano acid (C) STRANDEQNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE MESCRIPTION: SEQ ID NO:25:

Trp Met Ash Ser Thr Gly Phe Thr Lys

- (2) INFORMATION FOR SEQ ID NO:26:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amine acids
 - (E) TYPE: amind acid
 - (C) STRANDEDNESS: single
 - (D: TOFOLOGY: linear
- (ii) MOLECULE TYPR: peptide
- (mi) SEQUENCE DESCRIPTION: SEQ ID NO: 36:

Leu Gly Phe Gly Ala Tyr Met Ser Lys

- (2) INFORMATION FOR SEQ ID NO:27:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (P) TYFE: amine seid
 - (C: STFANDEDNESS: gingle
 - (I) TOFOLOGY: linear
- (ii) MODECUIDE TYFE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Val Ala Gly Ala Leu Val Ala Phe Lys

- (2) INFORMATION FOR SEQ ID NO:28:
- (i) SEQUENCE CHAPACTERISTICS:
 - (A) LENGTH: 9 amino adids
 - (F: TYPE: ardino acid
 - (C) STRAMDEDNESM: single
 - (D) TOPOLOGY: linear
- (ii) MOLECTLE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Met Val His Gin Ala Ile Ser Pro Arg

- (2) INFORMATION FOR SEQ ID NO:29:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B: TYPE: amine acid
 - (C: STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (11) MOLECULE TYPE: peptide
- (mi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Gln Met Val H:s Gln Ala Ile Ser Pro Arg 1 5 10

- (2 INPORMATION FOR SEQ ID NO:30:
- (1) SEQUENCE CHAFACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (E) TYPE: amino acid
 - (C) STRAMBEDNESS: single
 - (D) TOPOLOGY: limear
- (ii) MODECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Thr Ile Lys Ile Gly Gly Glh Leu Lys

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- (2) INFORMATION FOR SEQ ID NO:31:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (E) TYPE: amino acid
 - (C) STRANCEDNESS: sitgle
 - (D) POPOLOGY: linear
- (ii) MOLECULE TYPE: peptride
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Thr Leu Phe Cys Ala Ser Asp Ala Lys 5

- (2. INFORMATION FOR SEQ ID NO:32:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (P) TYPE: amine acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys 1 5 10

- (2) INFORMATION FOR SEQ ID NO:33:
- (i) SEQUENCE CHARACTERISTICS:
 - (A: LENGTH: 9 amine acids
 - (B TYPE: amine acid
 - (C STPANDEDNESS: single
 - (D. TOFOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Arg Ile Val Glu Leu Leu Gly Arg Arg

- (2) INFORMATION FOR SEQ ID NO:34:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Val Thr Ile Lys Ile Gly Gly Gln Leu Lys 1 10

- (2) INFORMATION FOR SEQ ID NO:35:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid\
 - (C) STFANDEDNESS: simple
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Val Met Ile Val Trp Glr. Val Asp Arg

- (2) INFORMATION FOR SEQ ID NO:36:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amint acids
 - (P) TYPE: armine acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

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11 (xi) SEQUENCE DESCRIPTION: SEQ ID No:36: His Leu Phe Gly Tyr Ser Trp Tyr Lys 1 (2) INFORMATION FOR SEQ ID NO:37: (1) SEQUENCE CHARACTERISTICS: (A) LENGTH: 9 amino acids (B) TYPE: amine acid (C) STRANDEDNESS: single (D) TOPOLOGY: Linear (ii) MOLECULE TYFE: péptide (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37: His Thr Gln Val Leu Phe Ile Ala Lys (2) INFOFMATION FOR SEQ ID NO:38: (1) SEQUENCE CHARACTERISTICS: (A) LENSTE: 10 amino acids (B) TYPE: amine acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: peptide (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Thr Ile Ser Erc Jer Tyr Thr Tym Tyr Arg

- (1) INFOFMATION FOR SEQ ID NO:39:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino adids
 - (B) TYPE: amino acid
 - (C STFANCEDNESS: single (C ToFohCGY: linear
- (ii) MOLECULE TYEE: peptide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Arg Thr Leu Thr Leu Phe Asn Val Thr Arg 1

- (2) INFORMATION FOR SEQ (ID NO:40:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STFANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg

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- (2) INFORMATION FOR SEQ ID NO:41:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTE: 10 amine acids
 - (B) TYPE: amino soid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (in) MOLECULE TYPE: peptide
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Thr Ile Ser Pro Leu Asn thr Ser Tyr Arg

- (2) INFOFMATION FOR SEQ ID NO:42:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (P) TYPE: amino adid
 - (C) STRANIEDNESS: single
 - (D) TOPOLOGY: linear
- (11) MOLECUIE TYPE: peptide
- (R1) SEQUENCE PESCRIPTION: SEQ ID NO:42:

Arg Thr Leu Thr Leu Leu Sem Val Thr Arg

- (2) INFORMATION FOR SEQ ID NO:43:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acuds
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (11) MOLECULE TYPE: peptide
- (1x) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: ...2
 - (D) OTHER INFORMATION:\ Kaa = Ser or Thr
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 30...3
 - (D) OTHER INFORMATION: Maa = Asp or Glu
- (x1) SEQUENCE LESCRIPTION: SEQ ID NO:43:

Xaa Xaa Xaa Pro Xaa Xaa Leu Xaa Tyk

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- (2) INFORMATION FOR SEQ ID NO:44:
- (i) SEQUENCE CHARACTERISTICS:
 - (A: LENGTH: 10 amin: abids
 - (B. 262E: amino soid
 - (C. STRAMBEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) DOCATION: Dy...2
 - (D) OTHER INFORMATION: Haa = Thr or Val
 - (A) NAME/KEY: Midified-site
 - (B) LOCATION: 33...3
 - (D) OTHER INFORMATION: Maa == Met or Phe
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Maa Maa Maa Maa Maa Maa Gln Lys Lys

- (3) INFORMATION FOR SEQ ID NO:45:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 aming acids

 - (r. 1788: amino acib (C; STRANDEDDESS: single
 - (E) ToPoLOGY: linear
- (ii) ModECULE TYPE: pertide
- (ix) FEATURE:
 - (A) NAME/KEY: Modifi@d-site
 - (B) LOCATION: 3...3 ·
 - (D) OTHER INFORMATION: Maa = Ile or Met
 - (A) MAME/KEY: Midified-site
 - (P) LOCATION: 4...4
 - (D) OTHER INFOFMATION: Maa = Asp, Glu, Gly, Lys or Pro
 - (A) NAME/KEY: Modified site
 - (B) ICCATION: E...E
 - (E) (THEF INFORMATION: Maa = Lys, Met or Asn
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Xaa Tyr Xaa Xaa Xaa Val Xaa Xaa Xaa Xaa 1

- (2) INFORMATION FOR SEQ ID NO:46:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LHIGTH: 9 aminc acids
 - (E) TYPE: arino acid
 - (C) STPANDEPNESS: single
 - (D) TOPOLOGY: linear

- (ii) MOLECULE TYRE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Leu, Met, Ile, Val, Ser, Ala, Thr, Phe, Cys, Gly, Asp or Glu
 - (A) NAME/KEY: Modified-site
 - (E) LOCATION: 9...\9
 - (D) OTHER INFORMATION: Maa = Lys, Arg, Tyr, His or Phe
- (xi) SEQUEUCE DESCRIPTION: SEQ ID NO:46:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa I

- (2) INFORMATION FOR SEQ ID NO:47:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (F) LOCATION: P...2
 - (D) OTHER INFORMATION: Maa = Leu, Met, Ile, Val, Ser, Ala, Thr, Phe, Cys, Gly, Asp or Glu
 - (A) MAME/KEY: Modified-site
 - (E) LOCATION: 10...10
 - (D) OTHER INFORMATION: Maa = Lys, Arg, Tyr, His or Phe
- (x)) SEQUENCE DESCRIPTION: SEQ ID NO:47:

- (2) INFOFMATION FOR SEQ ID NO:48:
- (i) SEQUENCE CHARACTERISTICS:
 - :A) LENGIH: 9 am:no acids
 - B) TYPE: amine acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYFE: peptide
- (ix) FEATURE:
 - (A) MAME/KEY: Modified-site
 - (E) LOCATION: 1...1
 - (D) OTHER INFORMATION: Maa = Thr, Ser or Met
 - (A) MAME/KEY: Modified-site
 - (E) LOCATION: L...2
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala, Ser or Thr

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:
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Maa Maa Maa Maa Maa Maa Maa Maa Tyr $^{-1}$

- (0) INFORMATION FOR MED ID NO:49:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STPANDEDMESS: single
 - (D) TOPOLOGY: linear
- (11) MOLECULE TYPE: peptide
- (im) FEATURE:
 - (A) DAME/KEY: Modified-site
 - (B) LOCATION: 1...1
 - (D) OTHER INFORMATION: Maa = Thr, Ser or Met
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala, Ser or Thr
- (x1) SEQUEDCE DESCRIPTION: SEQ ID NO:49:

Maa Maa Maa Maa Maa Maa Maa Tyr Maa 1 5 10

- (2) INFORMATION FOR SEQ ID NO:50:
- (a) SEQUENCE CHARACTER STICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amono acid
 - (C) STRAMMESMESS: single
 - (D. TOPOLOGY: linear
- (ii) MOLECULE TYPE: pept/rde
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 1...1
 - (I) OTHER INFORMATION: \Maa = Thr, Ser or Met
 - (A) MAME/REY: Modified-site
 - (P) LOCATION: 2...2
 - (5) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr
- (xi) SEQUENCE DESCRIPTION: \$EQ ID NO:50:

Maa Maa Maa Maa Maa Maa Maa Mab Tyr 1 5 \ \ \ 100

- (1) INFORMATION FOR SEQ ID\NO:51:
- (i SECTENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - By TYPE: amine acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

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- (ii) MOLECULE TYPE: peptide (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Thr, Ser or Met
 - (A) MAME/KEY: Modified-site
 - (B) LOCATION: 3...3
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala, Ser or Thr
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Kaa Kaa Kaa Kaa Kaa Maa Maa Maa Maa Tyr 1 5 10

- (2) INFORMATION FOR SEQ ID NO:51:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linbar
- (iii) MOLECULE TYPE: pertide
- (ix) FEATURE:
 - (A) MAME/KEY: Modified-site
 - (E) LOCATION: 1....1
 - (D) OTHER INFORMATION: Maa = Thr, Ser or Met
 - (A) MAME/KEY: Modified-site
 - (B) LOCATION: J...√
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala, Ser or Thr
- (ii) MOLECULE TYPE: paptide
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa 1 1 10

- (2) INFORMATION FOR SEQ ID NO:53:
- (i) SEQUENCE CHARACTERISTICS:
 - A) LENGTH: 11 amino acids
 - E) TYPE: amuno adid
 - (C) SIFAMBEDNESS: single
 - (D) TOFOLOGY: linear
- (i1) MOLECYLE TYPF: poptide ;
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 1...1
 - (D) OTHER INFORMATION: Maa = Thr, Ser or Met
 - (A) MAME/KEY: Modified-site
 - (E) BECATION: I...D
 - (D) OTHER INFORMATION: Maa → Asp, Glu, Ala, Ser or Thr

SND

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Maa Maa Maa Maa Maa Maa Maa Maa Tyr Maa 1 5 10

- (2) INFORMATION FOR SEQ ID NO:54:
- (L SEQUENCE CHARACTERISTICS:
 - .A) LENGTH: 11 aming acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (11) MODECULE TYPE: peptide
- (1x) FEATURE:
 - (A) NAME/RET: Modified-site
 - (B) LOCATION: P...2
 - (D) OTHER INFORMATION: Haa = Thr, Ser or Met
 - (A) NAME/KET: Modified-site
 - (B) LOCATION: 3.4.3
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala, Ser or Thr
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Kaa Kaa Kaa Kaa Kaa Kaa Kaa Kaa Tyr Kaa -1 - 10

- (2) INFORMATION FOR DEG ID NO:5):
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B) TYPE: amino acid \
 - (C) STRAMDEDNESS: single
 - (D) TOFOLOGY: linear
- (11) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/REY: Modified+site
 - (P) LOCATION: 1...2
 - (D) OTHER INFORMATION: Waa = Thr. Ser or Met
 - (A) NAME/KEY: Modified-dite
 - (P) LOCATION: ?...?
 - (D) OTHER INFORMATION: Haa = Asp, Glu, Ala, Ser or Thr
- (x1) SEQUENCE DESCRIPTION: S€Q ID NO:55:

Maa Maa Maa Maa Maa Maa Maa Maa Maa Tyr-1

- (2) INFORMATION FOR SEQ ID NO:50:
- (i SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (P) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (E) LOCATION: 3...3
 - (D) OTHER INFOFMATION: Maa = Thr, Ser or Met
 - (A) MAME/KEY: Modified-site
 - (B) LOCATION: 4...4
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala, Ser or Thr
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Maa Maa Maa Maa Maa Maa Maa Maa Maa Tyr 1 5 10

- (2) INFORMATION FOR SEQ ID NO:57:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 8 amine acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) MAME/KEY: Modified-site
 - (B) LOCATION: 1...1
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Maa Maa Maa Maa Maa Tyr Maa 1 5

- (2) INFORMATION FOR SEQ ID NO:58:
- (a) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 8 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) ToPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (Lx) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 1...1
 - (D) OTHER INFORMATION: Kaa = Glu or Asp
- (EL) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Maa Kaa Maa Maa Maa Maa Tyr

(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHAFACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STFAMDEDNESS: single
- (D) TOPOLOGY: linear
- (i.) MOLECULE TYPE: peptide
- (ix) FEATUFE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (xi) SEQUENCE DESCRIPTION: SEQ IE NO:59:

Maa Maa Maa Maa Maa Maa Tyr

(2) INFORMATION FOR SEQ ID NO:60:

(1) SEQUENCE CHARACTERISTICS:

- (A) LFHGTH: 9 amino acids
- (B) TYPE: among apid
- (C) STRANDEDNESS: single
- 'O) To POLOGY: linear
- (ii) MoLECULE TYPE: peptiao
- (im) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 1...1
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (xi) SEQUENCE DESCRIPTRON: SEQ ID NO:60:

Maa Maa Maa Maa Maa Maa Tyr Maa Maa -1

- (2) IMPOPMATING FOR SMQ ID NO:61:
- (E) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 aming acids
 - (B) TYPE: amine abid
 - (G) STRAMDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide/
- (ix) FEATURE:
 - (A) MAME/KEY: Modified-site
 - (B) LOCATION: 1...1
 - (D) OTHER INFORMATION: Kaa\= Glu or Asp
- (x.) SEQUENCE DESCRIPTION: SEQ\ID NO:61:

Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa

- (2) INFORMATION FOR SEQ ID NO:62:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D' TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2.1.2
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Kaa Maa Maa Maa Maa Maa Tyr Maa 1 5

- (2) INFORMATION FOR SEQ ID NO:63:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (11) MOLECULE TYPE: peptide
- (im) FEATURE:
 - (A) DAME/KEY: Modified-sit€
 - (E) LOCATION: 2...2
 - (D) OTHER INFORMATION: Haa = Glu or Asp
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Maa Maa Maa Maa Maa Maa Maa Maa Tyr 1 5

- (2) INFORMATION FOR SEQ ID NO:64:
- (1: SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEPNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (1x) FEATURE:
 - (A) MAME/KEY: Modified-site
 - (E) LOCATION: 1...1
 - (D) OTHER INFORMATION: Haa = Glu or Asp
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:64:

Maa Maa Maa Maa Maa Tyr Maa Maa Maa 1 5 10

5 wb

- (2) INFORMATION FOR SEQ ID MO:65:
- (i) SEQUENCE CHAPACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B: TYPE: amins acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: limear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 1...1
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (x1) SEPTEMOR DESCRIPTION: SEQ 10 NO:65:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa -1 -5 -10

- (A) INFORMATION FOR SEQ ID NO:66:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (iii) ModeBOTTE TYEE: peptide
- (LM) FRATURE:
 - (A) NAME/REY: Modified+site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Xaa Maa Maa Maa Maa Maa Tyr Maa Maa 1 1 - 10

- (J) IMPORMATION FOR SEQ IT NO:67:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amine acids
 - B. TYPE: amino acid
 - O STRANGEDNESS: single
 - (D) TOPOLOGY: lanear
- (iii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) MAME/KET: Modified-site
 - (Y) LOCATION: 1...2
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Xaa Xaa Xaa Xaa Xaa Xaa Xyr Xaa 10

200 m

(2) INFORMATION FOR SEQ ID NO:68:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B; TYPE: amine acid
- (C) STRAMBEDNESS: single
- (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 3....3
 - (D) OTHER INFORMATION: Raa = Glu or Asp
- (x1) SEQUENCE DESCRIPTION: SEQ 10 No:68:

(f) information for seq id No:69:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amind acids

- (B) TYPE: aming acid
- (C: STRANDEDNESS: single
- (D) TOPOLOGY: linear;
- (ii) MOLECULE TYPE: pertide
- (IM) FEATURE:
 - (A) MAME/KEY: Modificid-site
 - (P) LOCATION: 3...3
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:69:

Maa Maa Maa Maa Maa Maa Maa Maa Tyr -1 5 10

- (2) INFORMATION FOR SEQUID NO:70:
- (1 SEQUEDICE CHASACTERISTIDS:
 - 'A LENGTH: 10 amino acids
 - 'B TYTE: amine acid
 - (C) STFANDEDNESS: single
 - (D) TOPOLOGY: linear
- (11) MODECULE TYPE: peptide
- (1x) FEATURE:
 - (A) MAME/KEY: Modified-site
 - (F) IOCATION: 4...4
 - (b) OTHER INFORMATION: Maa = Glu or Asp
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

Maa Maa Maa Maa Maa Maa Maa Maa Tyr

(2) INFORMATION FOR SEQ ID NO:71:

(i) SEQUENCE CHAPACTERISTICS:

- HA LENGTH: 11 amine acids
- (B: TTPE: amino acid
- (C: STPANDEDNESS: single
- (D) TOPOLOGY: lanear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A NAME/REY: Modified-site
 - (B) LOCATION: 1...1
 - (D) OTHER INFORMATION: Haa = Glu or Asp
- (MA) SEQUENCE DESCRIPTION: SEQ ID NO:71:

Maa Maa Maa Maa Maa Tyr Maa Maa Maa Maa

(2) INFORMATION FOR SEQ ID NO:70:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino abids
- TB: TYFE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear
- (11) MODEFOULE TYPE: peptide
- (1M) FEATURE:
 - (A) NAME/KET: Modified-site
 - (B) BOCATION: 1...1
 - (D) OTHER INFORMATION: [Maa = Glu or Asp
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Maa Maa Maa Maa Maa Maa Tyr Maa Maa Maa 5 1

(2 INFORMATION FOR DEG ID NO:73:

(.: SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- P) TYEE: amino acid
- (C) STRAMBEDNESS: sirvile
- (D) TOFOLOGY: linear
- (il) MOLECULE TYPE: peptide
- (1x) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: J...2
 - (D) OTHER INFORMATION: Maa = dlu or Asp
- (xi) SEQUENCE DESCRIPTION: SEQ ID MO:73:

Maa Maa Maa Maa Maa Maa Tyr Maa Maa Xaa 5 1 Û

- (2) INFORMATION FOR SEQ ID NO:74:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B) TTPE: amino acid
 - (C) STRAMMEDNESS: single
 - (E TOPOLOGY: linear
- (ii) MoLECULE TYPE: peptide
- (im) FRATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Haa = Glu or Asp
- (x:) SHOTENCE DESCRIPTION: SEQ ID NO:74:

- (2) INFORMATION FOR SEQ ID NO:75:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B) TYPE: amine acid
 - (C) STRANDEDNESC: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (im) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 3...3
 - (F) OTHER INFORMATION: Maa = Glu or Asp
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:75:

- (f) INFOFMATION FOR SEQ ID NO:76:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amine acids
 - (B) TYPE: amono acid
 - (C) STRANDEDNESS: single
 - Do ToPoloGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) MAME/KEY: Midifiled-site
 - (B) LOCATION: 3...3
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (xt) SEQUENCE DESCRIPTION: SEQ ID NO:76:

- (2) INFORMATION FOR SEQ ID NO:77:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B: TYFE: amino acid
 - .C: STFAMEEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 4...4
 - (D) OTHER INFORMATION: Haa = Glu or Asp
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:77:

Maa Xaa Maa Maa Maa Maa Maa Maa Maa Tyr Maa 1 5 10

- (3) INFORMATION FOR SEQ ID NO:78:
- (1. SEQUENCE CHARACTERISTICS:
 - "A" LENGTH: 10 amino acids
 - (B) TYPE: amine acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (1m) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 4...4
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

Maa Maa Maa Maa Maa Maa Maa Maa Maa Tyr -1 - 5 - 10

- (2) INFORMATION FOR SEQ ID NO:79:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: f...5
 - (D) OTHER INFORMATION: Maa = Glu or Asp
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:79:

Kaa Xaa Kaa Kaa Kaa Kaa Kaa Kaa Kaa Tyr 10

(2) INFORMATION FOR SEQ ID NO:80:

(i) SEQUENCE CHARACTERISTICS:

- (A' LENGTH: 3 amino acids
- (B: TYPE: amane acid
- (C) STRANDEDNESS: sinule
- (0: TOPOLOGY: lunear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 3...2
 - (D) OTHER INFORMATION: Maa = Thm, Val, Met, Leu, Ile, Ser, Ala, Gly, Asn, Cys, Asp or Phe
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 9...9
 - (D) OTHER INFORMATION: Haa = Lys, Arg, Tyr or His
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:80:

Xaa Xaa Maa Maa Maa Maa Maa Maa Aaa 1

(1) INFORMATION FOR SEQ ID NO:81:

(1, DEODEWIE CHARACTERISTICS:

- (A) LENGTH: 10 amine acids
- \B\ TYPE: among acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (1M) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (E) LOCATION: 0...2
 - (L) OTHER INFORMATION: Maa = Thr, Val, Met, Leu, Ile, Ser, Ala, Gly, Asn, Cys, Asp or Phe
 - (A) NAME/KEY: Modified-site
 - (E) LOCATION: 10...10
 - (I) OTHER INFOFMATION: Maa = Lys, Arg, Tyr or His
- (xh) SEQUENCE DESCRIPTION: SEQ ID NO:81:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa 10

(1) INFOFMATION FOR SEQ ID NO:82:

(i' SEQUENCE CHAPACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/HEY: Modified-site
 - (B) LOCATION: J...2
 - (I) GIHLE INFORMATION: Kaa = Tyr, Phe or Trp
 - (A) NAME/KEY: Modified-site
 - (E) LOCATION: 9...9
 - (E) OTHER INFORMATION: Maa = Phe, Ile, Trp, Met or Leu
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:82:

Maa Maa Maa Maa Maa Maa Maa Maa -1

- (2) INFORMATION FOR SEQ ID NO:83:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amuno acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: pertide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) DOCATION: 1...2
 - (D) OTHER INFORMATION: Maa = Tyr, Phe or Trp
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 10...10
 - (D) OTHER INFORMATION: Maa = Phe, Ile, Trp, Met or Leu
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:

- (2) INFORMATION FOR SEQ ID NO:84:
- (i SEQUENCE CHAPACTERISTICS:
 - A) LENGTH: # amino acids
 - (B) TYPE: amine acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (iii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) MAMER KEY: II diffind-site
 - (B) LOCATION: L...2
 - (D) OTHER INFORMATION: Maa = Thr, Met or Ser
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:

Kaa Maa Maa Maa Maa Maa Tyr

(2) INFORMATION FOR SEQ ID NO:85:

(i) SEQUENCE CHAFACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRAMDEDNESS: single
- (D) TOPOLOGY: linear
- (ii) MOTECULE TYPE: peptide
- (ix) FFATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Thr, Met or Ser
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:85:

Maa Maa Maa Maa Maa Maa Maa Maa Tyr

(2) INFORMATION FOR SEQ ID NO:86:

(i) SEQUENCE CHARACTERISTICS:

- (A) DENGTH: 10 amine acids
- (B) TYPE: amino adid
- (C) STRAMBEDNESS: single
- (D) TOPOLOGY: linear
- (in) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A: MAME/KEY: Modif.ed-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Thr, Met or Ser
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:86:

Xaa Xaa Maa Maa Maa Maa Maa Maa Maa Tyr

(A: IMPOSMATION FOR SEQ ID NO:87:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear
- (11) MULECULE TYPE: peptider
- (ix) FEATURE:
 - (A) MAME/KET: Modified-site
 - (E) LOCATION: 2...2
 - (D) OTHER INFORMATION: Haa = Thr, Met or Ser
- (xL) SEQUENCE DESCRIPTION: SEQ ID NO:87:

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(2) INFORMATION FOR SEQ ID NO:88:

- (i) SEQUENCE CHAFACTERISTICS:
 - (A) DENGTH: 8 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 3...3
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala or Ser
- (K1) SEQUENCE DESCRIPTION: SEQ ID NO:88:

Kaa Kaa Maa Maa Maa Maa Tyn 1 5

- (3) INFORMATION FOR SEQ ID NO:83:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino adid
 - (C) STRANDEDNESS: single
 - (D) TOFOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (i.x) FEATURE:
 - (A) MAME/KEY: Modified-site
 - (B) LOCATION: 3...3
 - (D) OTHER INFORMATION: | Haa = Asp, Glu, Ala or Ser
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:89:

Maa Maa Maa Maa Maa Maa Maa Tyr

- (2) INFORMATION FOR SEQ ID NO:90:
- (1) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYFE: amino acid
 - (C) STRANDEDNESS: sinule
 - (D) TOFOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATUFE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 3...3
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala or Ser
- (x...) SEQUENCE DESCRIPTION: SEQ ID NO: 3Q:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr 1 5 10

Sub (2)

- (2) INFORMATION FOR SEQ ID NO:91:
- (i) SEQUENCE CHARACTERISTICS:
 - (A LENGTH: 11 amine acids
 - ,B; TYPE: amino acid
 - (C) STFAMBEDNESS: single
 - (D) TOFOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) MAME/HEY: Modified-site
 - (B) LOCATION: 3.3.3
 - (D) OTHER INFORMATION: Maa = Asp, Glu, Ala or Ser
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:91:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr

- (2) INFORMATION FOR SEQ ID NO: 92:
- (in SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 8 amino adids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (iii) MOLETULE TYEE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 0...2
 - (D) OTHER INFORMATION: Make = Leu, Met, Val, Ile, Ser, Ala, Thr, Fhe, Cys, Gly or Asp
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 8...8
 - (D) OTHER INFORMATION: Maa ≠ Lys, Tyr, Arg, His or Phe
- (xu) SEQUENCE DESCRIPTION: SEQ 10 NO: 92:

Maa Maa Maa Maa Maa Maa Maa Maa 1

- (2) INFORMATION FOR SEQ ID NO:93:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) POPOLOGY: linear
- (ii) MOLECULE TYPF: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 0...2
 - (D) OTHER INFORMATION: Maa = Leu, Met, Val, Ile, Ser, Ala, Thr, Phe, Cys, Gly or Asp

Sup

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 9...9
- (D) OTHER INFOFMATION: Maa = Lys, Tyr, Arg, His or Phe
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:93:

Maa Maa Maa Maa Maa Maa Maa Maa Maa 1

- (2) INFORMATION FOR SEQ ID NO: 34:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) HENGTH: 10 amino adids
 - (B) TYPE: amino acid
 - (C) STRAMDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) MAME/KEY: Modified-site
 - (B) Location: 1...2
 - (D) OTHER INFORMATION: Maa = Leu, Met, Val, Ile, Ser, Ala, Thr, Phe, Cys, Gly or Asp
 - (A) NAME/KEY: Modified-site
 - (B) DOCATION: 10...10
 - (D) OTHER INFORMATION: Hat = Lys, Tyr, Arg, His or Phe
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:94:

- (2) INFOFMATION FOR SEQ ID NO: 45:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYFE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 1...2
 - (D) OTHER INFORMATION: Maa = Leu, Met, Val, Ile, Ser, Ala, Thr, Phe, Cys, Gly or Asp
 - (A) NAME/REY: Modified-site
 - (B) LOCATION: 11...11
 - (D) OTHER INFORMATION: Haa = Lys, Tyr, Arg, His or Phe
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:95:

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- (2) INFORMATION FOR SEQ ID NO:96:
- (i SEQUENCE CHARACTERISTICS:
 - (A. LENGTH: 8 amine acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Haa = Leu, Met, Ile, Val, Ala, Ser, Thr, Gly, Asn, Cys, Phe or Asp
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 8...8
 - (D) OTHER INFORMATION: Maa = Lys, Arg or His
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:96:

Xaa Xaa Maa Maa Maa Maa Maa Maa 1

- (1) INFOFMATION FOR SEQ ID NO:97:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amine acid
 - (C) STRANDEDNESS: single
 - (D) ToPOLOGY: linear
- (11) MoLETULE TYPE: peptide
- (im) FRATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Leu, Met, Ile, Val, Ala, Ser, Thr, Gly, Asn, Cys, Phe or Asp
 - (A) NAME/KEY: Modified-site
 - (E) LOCATION: 9...9
 - (D) OTHER INFORMATION: Maa = Lys, Arg or His
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:97:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

- (1) INFOFMATION FOR SEQ ID NO:98:
- (i SECURNCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amine acid
 - -C) STRANDEDNESS: single
 - (D) TOPCLOGY: linear

- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Leu, Met, Ile, Val, Ala, Ser, Thr, Gly, Asn, Cys, Phe or Asp
 - (A) NAME/FEY: Modified-site
 - (B) LOCATION: 10.,.10
 - (D) OTHER INFORMATION: Haa = Lys, Arg or His
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:98:

- (2) INFOFMATION FOR SEQ ID NO:99:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amine acids
 - (B) TYPE: amono acid
 - (C) STRANDEDNESS: single
 - (D) TOFOLOGY: linear
- (ii) MOLECCLE TYPE: peptide
- (im) FLATURE:
 - (A) DAME/REY: Modified-site
 - (B) LOCATION: 0...2
 - (D) OTHER INFORMATION: Maa = Len, Met, Ile, Val, Ala, Ser, Thr, Gly, Asn, Cys, Phe or Asp
 - (A) MAME/KEY: Modified-site
 - (P) LOCATION: 11...11
 - (D) OTHER INFORMATION: Maays Lys, Arg or His
- (x.) SEQUENCE DESCRIPTION: SEQ (ID NO:99:

Xaa Xaa Mas Mas Mas Mas Mas Mas Mas Mas Mas 10^{11}

- (2) INFORMATION FOR SEQ ID NO:100:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: P amino acids
 - .B> TYPE: amon: acid
 - (C+ STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) MAME/REY: Modified-site
 - (B) LOCATION:
 - (E) OTHER INFORMATION: Haa = Tyr, Phe or Trp
 - (A) UAME/KEY: Undified-site
 - (B) LOCATION: S...*
 - (D) OTHER INFORMATION: Maa = Phe, Ile, Leu or Trp

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:100:

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- (2) INFORMATION FOR SEQ ID NO:101:
- (i SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 amino acids
 - (B) TYPE: amino adid
 - (C) STPANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (ix) FFATURE:
 - (A) NAME/KEY: Modified-site
 - (B) LOCATION: 3...2
 - (D) OTHER INFORMATION: Kaa = Tyr, Phe or Trp
 - (A) MAME/REY: Modified-site
 - (B) LOCATION: 9...%
 - (D) OTHER INFORMATION: Maa = Fhe, Ile, Leu or Trp
- (x1) SEQUENCE DESCRIPTION: SEQ ID NO:101:

Maa Maa Maa Maa Maa Maa **M**aa Maa Maa 1

- (2) INFOSMATION FOR SEQ ID NO:102:
- (i) SEQUENCE CHARACTER ISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (11) MODESCULE TYPE: peptide
- (1x) FEATURE:
 - (A) MAME/KEY: Modified→site
 - (B) LOCATION: I...2
 - (D) OTHER INFORMATION: Kaa = Tyr, Phe or Trp
 - (A) MAKE/KEY: Modified-site
 - (E) LOCATION: 10...10
 - (D) OTHER INFORMATION: Mad = Phe, Ile, Leu or Trp
- (xt) SEQUEDCE DESCRIPTION: SEQ ID NO:102:

- (2) IMPORMATION FOR SEQ ID NO:103:
- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

- (ii) MOLECULE TYPE: peptide
- (ix) FEATURE:
 - (A) NAME/KEY: Mcdified-site
 - (B) LOCATION: 2...2
 - (D) OTHER INFORMATION: Maa = Tyr, Phe or Trp
 - (A) NAME/KEY: Modified-site

 - (B) LOCATION: 11...11
 (D) OTHER INFORMATION: Maa = Phe, Ile, Leu or Trp
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:103:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa